

**INITIAL STATEMENT OF REASONS  
FOR  
PROPOSED BUILDING STANDARDS  
OF THE  
DIVISION OF THE STATE ARCHITECT – STRUCTURAL SAFETY (DSA-SS)**

**REGARDING THE CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen Code)  
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11**

The Administrative Procedure Act (APA) requires that an Initial Statement of Reasons be available to the public upon request when rulemaking action is being undertaken. The following information required by the APA pertains to this particular rulemaking action:

**STATEMENT OF SPECIFIC PURPOSE, PROBLEM, RATIONALE and BENEFITS:**

(Government Code Section 11346.2[b][1] requires a statement of specific purpose of each adoption, amendment, or repeal and the problem the agency intends to address and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem the agency intends to address for which it is proposed. The statement shall enumerate the benefits anticipated from the regulatory action, including the benefits or goals provided in the authorizing statute.)

This proposed action by DSA adopts mandatory green building standards for occupancies within its authority. The intent of the code continues to (1) reduce greenhouse gas (GHG) emissions, and (2) promote environmentally responsible, cost-effective, healthier places for students and workers.

Proposed changes to the building standards with statewide application will lead to substantial environmental benefits through reduction in the use of energy, water, and raw materials, and overall reduced detrimental environmental impacts.

**Specific Proposed Regulatory Actions:** DSA proposes to amend the 2016 CALGreen Code for inclusion in the 2019 triennial edition. It is DSA's intent to provide clarity to the code user in consistent reference nomenclature to other parts of Title, 24. The rationale for each adoption by chapter, division, and section is listed below.

**ITEM 1.** DSA proposes to amend Chapter 1, Section 105.

**Section 105.1.1 – Application – Public elementary and secondary schools and community colleges.**

**Specific Purpose:**

This proposed action is editorial in nature to provide clarity to how the CALGreen Code applies to building and site work construction at new and existing public school and community college sites.

**Rationale:**

Amended language proposed to differentiate between project types at new sites as compared to the variety of construction project types at an existing site.

**Benefit:**

Maintain clarity and consistency for the code user and better align with the scoping requirements of Section 301.4

**ITEM 2.** DSA proposes to amend Chapter 2, Section 202- Definitions.

**Section 202 Definitions.**

**Specific Purpose:**

Update definitions for the code user and add new definitions.

**Rationale:**

DSA adopts Chapter 2 in its entirety and proposes to add definitions to Chapter 2.

**Benefit:**

To provide clarity for the code user.

**ITEM 3.** DSA proposes to revise Chapter 3, Section 301.4 to address application of the requirements at new and existing sites.

**Section 301.4 Mandatory measures for public schools and community colleges.**

**Specific Purpose:**

Separating the scope for new and existing sites clarify how the new proposed mandatory measures apply. A revision to this section includes the repeal of exceptions to the minimum rehabilitated landscape area requirements for existing sites.

**Rationale:**

General revision is proposed to provide clarity for the code user. Specific revision for the repealing of the exceptions in Section 301.4.1 is proposed to address conservation of potable water supply by increasing water use efficiency for existing irrigated landscape areas.

**Benefit:**

The revised scoping provisions address clarity for the code user. Conservation of potable water and increased water use efficiency necessitates the repeal of the exceptions.

**ITEM 4.** DSA proposes to repeal Chapter 3, Section 306, Voluntary measures in its entirety; and then, move language to Section 301.4.

**Section 306 [DSA-SS] VOLUNTARY MEASURES.**

**Specific Purpose:**

This section is non-regulatory and encourages implementation of optional voluntary measures. DSA proposes to move the requirements of this section in its entirety to Section 301.4 for better clarity.

**Rationale:**

Deleting this section and providing the scoping provisions for public schools and community colleges in Section 301.4 provides clarity to the code user.

**Benefit:**

Deleting this section and providing the scoping provisions for public schools and community colleges in Section 301.4 provides clarity to the code user.

**ITEM 5.** DSA proposes to adopt Section 5.106.5.3 for Electrical Vehicle (EV) Charging.

**Section 5.106.5.3 – Electrical Vehicle (EV) Charging.**

**Specific Purpose:** DSA proposes to co-adopt the non-residential code Section 5.106.5.3, electrical vehicle (EV) charging related to the construction of new buildings at new and existing sites.

**Rationale:**

This proposed new mandatory measure would contribute the goals of Executive Order (EO) B-48-18 for the installation of infrastructure for future electric vehicle charging stations. EO B-48-18, January

26, 2018, sets a goal of 5 million zero-emission vehicles (ZEV) by 2030 and directs the expansion of vehicle charging infrastructure in California with the goal to install 250,000 zero-emission vehicle chargers, including 10,000 direct current fast chargers, by 2025.

**Benefit:** The installation of EV infrastructure (electrical, piping and transformer, etc.) is more cost effective during initial construction, and encourages the installation of electrical vehicle charging stations for public schools and community colleges in the future.

**ITEM 6.** DSA proposes to amend the language for Section 5.106.8, Light Pollution.

#### **Section 5.106.8 Light pollution reduction.**

**Specific Purpose:**

DSA proposes to co-adopt the revisions made by the CBSC during the 2016 Intervening Code Cycle for Section 5.106.8, Light Pollution, to align school facility requirements with the nonresidential requirements of the CALGreen Code.

**Rationale:**

For consistency in Title 24 codes by co-adopting CBSC's Light Pollution Reduction measure which aligns with the current version of Title 24, Part 6, California Energy Code's language and tables.

**Benefit:**

Maintain clarity and consistency in the code and align with the California Energy Code, Title 24, Part 6.

**ITEM 7.** DSA proposes to adopt a new site development section to require shade trees.

#### **Section 5.107 Shade Trees.**

**Specific Purpose:** Proposed code section will require the planting of shade trees at open areas of public school and community college sites.

**Rationale:**

Many city and county ordinances require shade trees at open areas of nonresidential sites; however, public schools and community college sites are not required to comply with these ordinances.

**Benefit:**

Studies document the benefit of shade trees, as follows:

- A. Trees are linked to public health, water quality, energy savings, and air quality.
- B. Experiencing trees outside or viewing them from indoors at schools have proven to:
  - Provide opportunities for physical activity known to improve cognitive function, learning and memory.
  - Provide shade to prevent skin cancer.
  - Encourage imagination and creativity, cognitive and intellectual development, and social relationships.
  - Positively impact cognitive functioning and ability to concentrate.
  - Lower stress levels which influences self-discipline.
  - Improve student test scores and overall academic performance.

Reference articles:

- [https://www.huffingtonpost.com/jared-green/new-study-students-learn-b\\_9143290.html](https://www.huffingtonpost.com/jared-green/new-study-students-learn-b_9143290.html)
- <https://naaee.org/eepr/research/library/impact-views-school-landscapes-recovery>

- Student Performance and High School Landscapes: Examining the Links  
<https://www.sciencedirect.com/science/article/pii/S0169204610001465>
- Views to Nature: Effects on Attention  
<https://www.sciencedirect.com/science/article/pii/0272494495900160>
- Green Urban Landscapes & School-Level Academic Performance  
<https://www.sciencedirect.com/science/article/pii/S0169204616302651>
- Linking Student Performance in Massachusetts Elementary Schools with the 'Greenness' of School Surroundings Using Remote Sensing  
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0108548>

C. Shading parking lots and other asphalt areas:

- Lowers urban heat island impacts by reducing surface and ambient air temperatures lowering levels of air pollution.
- Reduces evaporated gasoline and oils that contribute to air pollution ozone
- Slows storm water runoff .
- Extends the life span of asphalt pavement by nearly 30 percent.
- Reduces the heat island effect on asphalt which has a direct correlation to the length of air pollution going after sunset and to health impacts on student lungs.

D. Other studies show that an increase of trees in city areas (urban forests) increases outdoor air quality and reduces carbon emissions:

Reference articles:

- [http://calfire.ca.gov/resource\\_mgt/resource\\_mgt\\_urbanforestry](http://calfire.ca.gov/resource_mgt/resource_mgt_urbanforestry)
- <http://www.sactree.com/pages/471>
- <http://www.isa-arbor.com/>
- [https://staff.washington.edu/kwolf/KW\\_CV/](https://staff.washington.edu/kwolf/KW_CV/); <http://depts.washington.edu/hhwb/>

**ITEM 8.** DSA proposes to amend DSA-SS Section 5.303.3.3.3, to adopt the more restrictive requirements for showerheads adopted by the CBSC during the 2016 Intervening Code Cycle.

**Section 5.303.3.3 Showerheads.**

**Specific Purpose:**

DSA proposes to amend the existing requirements for showerheads and adopt the more restrictive requirements for showerheads adopted by the CBSC during the 2016 Intervening Code Cycle.

**Rationale:**

DSA is proposing to amend the showerhead flow rate to align with the California Energy Commission's 2015 Appliance Efficiency Standards for showerheads which will restrict the sale and installation of showerheads with a flow rate greater than 1.8 gpm @ 80 psi on or after July1, 2018.

**Benefit:**

Maintain clarity and consistency in the code and align with the California Energy Commission's 2015 Appliance Efficiency Standards.

**ITEM 9.** DSA proposes to co-adopt the amendments proposed by the California Building Standards Commission for the 2018 Triennial Code Cycle to Chapter 5, Section 5.407.1.

**Section 5.407.1 Weather protection.**

**Specific Purpose:**

DSA is proposing to co-adopt CBSC amendment to Chapter 5, Section 5.407.1 Weather protection to correct a referenced section number and to repeal the reference to the California Energy Code Section 150 (Mandatory Features and Devices).

**Rationale:**

This section is proposed for amendment to provide the updated code section reference in the California Building Code for weather protection requirements. The repeal of the reference to the California Energy Code Section 150 (Mandatory Features and Devices) is needed since that specific code section, found in the California Energy Code, does not apply to Nonresidential occupancies. This amendment is editorial and non-substantive with no intended change in regulatory effect.

**Benefit:**

Adding these amendments to referencing the correct code section and to repeal the reference to inaccurate information will aid the code user in properly applying the correct codes which will help avoid confusion between residential and nonresidential code requirements. Additional benefit is derived by simplifying the code to only reference one external code.

**ITEM 10.** DSA proposes to co-adopt the amendments proposed by the California Building Standards Commission for the 2018 Triennial Code Cycle to Chapter 5, Section 5.504.4.4.

**Section 5.504.4.4 Carpet systems.**

**Specific Purpose:**

DSA is proposing to co-adopt CBSC amendment to Chapter 5, Section 5.504.4.4 Carpet systems to correct the referenced year for the new CHPS criteria for VOC limits.

**Rationale:**

These two code sections are proposed for amendments to correct the referenced year from 2012 to 2014-CA for the CHPS criteria for VOC limits. The CHPS standard has been recently updated so these sections need to reference the accurate standards to avoid a conflict. This amendment is editorial and non-substantive with no intended change in regulatory effect.

**Benefit:**

Adding these amendments to update the appropriate year for the new CHPS criteria for VOC limits standards will aid the code user in properly applying the correct reference standards.

**ITEM 11.** DSA proposes to co-adopt the amendments proposed by the California Building Standards Commission for the 2018 Triennial Code Cycle to Chapter 5, Section 5.504.4.6.

**Section 5.504.4.6 Resilient flooring systems.**

**Specific Purpose:**

DSA is proposing to co-adopt CBSC amendment to Chapter 5, Section 5.504.4.6 Resilient flooring systems to correct the referenced year for the new CHPS criteria for VOC limits.

**Rationale:**

These two code sections are proposed for amendments to correct the referenced year from 2012 to 2014-CA for the CHPS criteria for VOC limits. The CHPS standard has been recently updated so these sections need to reference the accurate standards to avoid a conflict. This amendment is editorial and non-substantive with no intended change in regulatory effect.

**Benefit:**

Adding these amendments to update the appropriate year for the new CHPS criteria for VOC limits standards will aid the code user in properly applying the correct reference standards.

**ITEM 12.** DSA is aligning language and co-adopting provisions with the California Building Standards Commission in the rating of filters referenced in Chapter 4, Section 401.2 of the California Mechanical Code, and Chapter 5, Section 5.504.5.3 of the California Green Building Standards Code.

### **Section 5.504.5.3 Filters.**

**Specific Purpose:** DSA is proposing to co-adopt CBSC amendment to Chapter 5, Section 5.504.5.3 Filters to update the Minimum Efficiency Reporting Value (MERV) rating for mechanically ventilated buildings and to amend the “Exceptions” section item 1 to remove the reference to the *California Energy Code*.

**Rationale:**

This Section 5.504.5.3 is proposed for amendment to change the MERV rating from a MERV 8 to a MERV 13 to align with the recently approved 2019 Energy Efficiency Standards found in Part 6 *California Energy Code* promulgated by the California Energy Commission which increased the MERV rating from a MERV 6 to a MERV 13. In the California Energy Commission rulemaking package ISOR language for the MERV increase the Energy Commission stated the following:

*“Increase air filter filtration requirements to a Minimum Efficiency Reporting Value (MERV) of 13, necessary for filtering out the smallest category of potentially harmful particulates. This change includes requiring that certain return grills accommodate a two inch filter depth, to ensure that MERV 13 filters can be installed with little or no impact on overall system performance. Staff identified a MERV rating of 13 as being effective at filtering out fine particulate matter (PM<sub>2.5</sub>) while also being available in a one inch form factor with a negligible effect on pressure drop compared to an average filter with the currently required MERV rating of six. Staff further identified a need to ensure that HVAC systems are designed to accommodate higher MERV filters so that occupants with a need or desire for improved filtration that meet this need by installing such a filter are not inadvertently harming the energy efficiency, lifespan, or overall performance of their system by doing so. Staff found that when higher MERV filters are installed by occupants, they can potentially increase system pressure drop and reduce system energy efficiency – while some 1” MERV 13 filters exist that have comparable pressure drop to 1” MERV 6 filters, this was not true for all MERV 13 filters nor for filters at higher MERV ratings. Staff found that the industry already produces filters with greater surface area specifically to address pressure drop: by increasing filter depth and number of pleats, the total surface area of the filter is increased and the effects on system pressure decreased. Staff found that filters with the same pressure effects as a one-inch MERV 6 filter and higher MERV ratings are broadly available at a two-inch filter depth, increasing the breadth and depth of selections available to consumers. In addition to the above, staff notes that individuals that are not able to meet their air filtration and IAQ needs via their HVAC system would be likely to use a supplementary or stand-alone (i.e., portable) air purifier, with an associated increase in energy use. Providing the ability to install high MERV filters into the building’s HVAC system avoids this unnecessary use of energy. For these reasons, staff is proposing to raise the requirement for the initial filter installed for HVAC equipment to a MERV of 13, and to require that systems be able to accommodate a two-inch filter so that selection of higher (13 and above) MERV replacement filters does not decrease equipment efficiency. These changes are necessary to ensure that consideration and adoption of envelope requirements is not impeded by indoor air quality concerns, to ensure that selection of higher MERV replacement filters does not impede system energy efficiency, lifespan, or performance, and to avoid increases in energy use that would result from increased use of supplementary or stand-alone (i.e., portable) air filtration and purification devices.”*

To maintain consistency and to avoid conflict between Part 11 and Part 6; the CBSC’s proposal to increase the MERV rating from 8 to 13 is necessary. This amendment is substantive and has a change in regulatory effect.

CBCS's proposal to amend Section 5.504.5.3, "Exceptions" item 1 to remove the reference to the *California Energy Code* is necessary as it was determined by the California Energy Commission that the 2013 Energy Code does not make a distinction at 60,000 BTU/hr except in relation to process loads (and, even then, only for fan controls, not for filtration). Additionally, Part 6 was reviewed for any references that specify cfm airflow, and they could not find a provision with a matching threshold. Thus, the Energy Commission's recommendation is to strike the reference to the Energy Code and leave the rest of the exception intact. This is based on not finding a specific section or provision in 2013 that has matching thresholds or provisions, and not finding a case where equipment *not* complying with Part 6 but meeting the other provisions of the exception would be able to be installed. This amendment is editorial and non-substantive with no intended change in regulatory effect.

**Benefit:**

Adding these amendments to Section 5.504.5.3 maintains consistency and avoids conflict between Part 11 and Part 6 code language for MERV ratings. The amendment to Exception 1 will help avoid confusion for the code user by eliminating a code reference that is not applicable.

**ITEM 13.** DSA proposes to co-adopt the amendments proposed by the California Building Standards Commission for the 2018 Triennial Code Cycle to Chapter 5, Section 5.505.1.

**Section 5.505.1 Indoor moisture control.**

**Specific Purpose:**

DSA is proposing to co-adopt CBSC amendment to Chapter 5, Section 5.505.1 Indoor moisture control to correct a referenced section number and to repeal the verbiage that states "...not applicable to low-rise residential occupancies..."

**Rationale:**

This section is proposed for amendment to provide the accurate code section in the California Building Code for Ventilation requirements. The repeal of the verbiage that states "...not applicable to low-rise residential occupancies..." is needed since that specific verbiage does not apply to Nonresidential occupancies and is superfluous. This amendment is editorial and non-substantive with no intended change in regulatory effect.

**Benefit:**

Adding these amendments to referencing the correct code section and to repeal the reference to inaccurate information will aid the code user in properly applying the correct codes which will help avoid confusion between residential and nonresidential code requirements.

**ITEM 14.** DSA proposes to strike Chapter 8 in its entirety with the exception of the tables indicated in the matrix adoption table below, as referenced in Section 5.106.8.

**Chapter 8, Compliance Forms, worksheets and Reference Materials.**

**Specific Purpose:**

Presently Chapter 8 is reference material and not a regulatory requirement. Revisions to Chapter 8 proposed by CBSC in the 2018 Triennial Code Cycle are to make this reference material regulatory. DSA proposes to clarify its intent in Section 301.4 that the information in Chapter 8 remains as reference information, with the exception of the Tables indicated as regulatory in Section 5.106.8.

**Rationale:**

CBSC is proposing to add regulatory forms for commissioning and testing and adjustment in Chapter 8. DSA does not adopt these sections in CALGreen with the exception of the Tables indicated as regulatory in Section 5.106.8.

**Benefit:**

Maintain clarity and consistency for the code user.

**TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS:**

(Government Code Section 11346.2[b][3] requires an identification of each technical, theoretical, and empirical study, report, or similar document, if any, upon which the agency relies in proposing the regulations.)

No technical, theoretical, or empirical studies or reports were used, as Section 18928 of the Health & Safety Code mandates this proposed action.

**STATEMENT OF JUSTIFICATION FOR PRESCRIPTIVE STANDARDS:**

(Government Code Section 11346.2[b][1] requires a statement of the reasons why an agency believes any mandates for specific technologies or equipment or prescriptive standards are required.)

Health and Safety Code (HSC) Section 18941 requires consistency with state and nationally recognized standards for building construction in view of the use and occupancy of each structure to preserve and protect the public health and safety.

**CONSIDERATION OF REASONABLE ALTERNATIVES**

(Government Code Section 11346.2[b][4][A] requires a description of reasonable alternatives to the regulation and the agency's reasons for rejecting those alternatives. In the case of a regulation that would mandate the use of specific technologies or equipment or prescribe specific action or procedures, the imposition of performance standards shall be considered as an alternate. It is not the intent of this paragraph to require the agency to artificially construct alternatives or describe unreasonable alternatives.)

The Division of the State Architect has not identified any reasonable alternatives to the proposed action.

**REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS.**

(Government Code Section 11346.2[b][4][B] requires a description of any reasonable alternatives that have been identified or that have otherwise been identified and brought to the attention of the agency that would lessen any adverse impact on small business.)

No adverse impact to small business due to these proposed changes is expected.

**FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE IMPACT ON BUSINESS.**

(Government Code Section 11346.2[b][5][A] requires the facts, evidence, documents, testimony, or other evidence on which the agency relies to support an initial determination that the action will not have a significant adverse economic impact on business.)

The Division of the State Architect has no evidence indicating any potential significant adverse impact on business with regard to the proposed action.

**ASSESSMENT OF EFFECT OF REGULATIONS UPON JOBS AND BUSINESS EXPANSION, ELIMINATION OR CREATION**

(Government Code Sections 11346.3[b][1] and 11346.5[a][10])

The Division of the State Architect as assessed whether or not and to what extent this proposal will affect the following:

☐ The creation or elimination of jobs within the State of California.

There will be no positive or adverse impact.



- ☐ The creation of new businesses or the elimination of existing businesses within the State of California.

There will be no positive or adverse impact.

- ☐ The expansion of businesses currently doing business with the State of California.

There will be no positive or adverse impact.

- ☐ The benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment.

There will be positive impact to the health and welfare of California school and essential services buildings, worker safety, and the state's environment.

### **ESTIMATED COST OF COMPLIANCE, ESTIMATED POTENTIAL BENEFITS, AND RELATED ASSUMPTIONS USED FOR BUILDING STANDARDS**

(Government Code Section 11346.2[b][5][B][i] states if a proposed regulation is a building standard, the initial statement of reasons shall include the estimated cost of compliance, the estimated potential benefits, and the related assumptions used to determine the estimates.)

The costs of electrical vehicle charging infrastructure is not significant when installed during new construction. The cost of trees is minimal and the benefits outweigh the cost. (Refer to Form 399 General and Attachments 1 and 2.)

The CA Energy Commission (CEC) made a change in air filtration requirements to improve indoor air quality for the better health of building occupants. The effect on local government (K-12 school and community college districts) will be an increase in air filter/grill costs of \$138,070 for new construction and \$12,234 for modernization. The effect on state government will be \$138,070 for new construction, \$18,352 for modernization and \$688 for essential services buildings. There will be no effect on federal government. There will be no effect on jobs and employment. The cost per square foot increase was provided to DSA by the Energy Commission, and was applied to average area of new and alteration work approved for construction by DSA over the previous 5 years. (Refer to Form 399 Filters and Attachments A, B, and C.)

### **DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS**

(Government Code Section 11346.2[b][6] requires a department, board, or commission within the Environmental Protection Agency, the Resources Agency, or the Office of the State Fire Marshal to describe its efforts, in connection with a proposed rulemaking action, to avoid unnecessary duplication or conflicts with federal regulations contained in the Code of Federal Regulations addressing the same issues. These agencies may adopt regulations different from these federal regulations upon a finding of one or more of the following justifications: (A) The differing state regulations are authorized by law and/or (B) The cost of differing state regulations is justified by the benefit to human health, public safety, public welfare, or the environment.)

The proposed regulations do not duplicate or conflict with federal regulations.